Lesson 9 - Vitamins: The Metabolic Wizards Of Life Processes

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1. Prologue

1.1 The Role Of Vitamins In Human Nutrition: A Hygienic View

1.1.1 Misconceptions About Vitamins

The role of vitamins in nutrition is one of the most widely misunderstood subjects in a study of nutritional science. Today, in this age of technology, industry, food products, pills, powders and potions, vitamin supplementation is considered essential for good health in most circles—from the medical circles to the holistic groups and naturopaths. Some advocate a multiple vitamin each day from the drug store; others promote several bottles of a variety of vitamin tablets from the natural foods stores or distributors. Some say we also need to get a balanced variety of minerals in our supplementation program, and others say we also need a protein powder supplement. Both of the latter emphasize the need for a "complete" nutritional supplementation program and not just vitamins alone.

The cons of using food supplements and why they are harmful and unnecessary will be treated in greater depth in a later lesson. Here we will only note that the current preoccupation with vitamins is totally inappropriate and that, while vitamins are necessary, they are amply supplied in natural raw foods of our biological adaptation.

Keep in mind, also, that foods are not to be prescribed in place of supplements as "cures" for symptoms that people often interpret as vitamin and other nutrient deficiencies. Foods should be consumed as much for their carbohydrate (calorie) content as for their vitamin, mineral or protein content. Also, the importance of the water and the undiscovered nutrients in whole fresh foods should not be

underestimated. At all times foods should be considered in their entirety and not as specific sources of specific vitamins and other nutrients.

In the following lesson, foods particularly rich in each vitamin will be listed, but this is not so you or your clients can eat certain foods to obtain certain vitamins; rather, it is just to show you how the foods of our biological adaptation (fresh fruits, vegetables, nuts and seeds) provide adequate amounts of all the known vitamins that we need.

1.1.2 The Quantity of Vitamins We Need Is Small

In a national bestseller, *Everything You Always Wanted To Know About Nutrition*, Dr. David Reuben pooh poohs our preoccupation with vitamins by pointing out that if we took all the vitamins we need in the quantities recommended (which is much higher than actually required), a whole year's supply would not fill a thimble!

For further perspective as to the minuteness of our quantitative needs, let's look at vitamin A. It is recommended that the average adult get 5,000 international units daily to meet needs. One IU weighs one microgram, or one-millionth of a gram, and there are 28 1/2 grams in an ounce. Therefore, 5,000 IUs of vitamin A equal one 5700th of an ounce. If 5,000 IUs were supplied in the diet every day, it would be more than fifteen years before we would have consumed a single ounce!

Or look at vitamin D. This vitamin is formed by the interaction of sunlight and ergosterol in the skin. Our needs are met by so little sunlight that Dr. Reuben has pointed out that while a vitamin D deficiency could occur to a black nun living in Norway, it is an unlikely occurrence in most cases.

Dr. Reuben has observed that, despite the atrociousness of most diets, it is difficult to keep from getting enough vitamins. We can't avoid repleteness of some vitamins even if we try. Let's examine vitamins B-12 and K as examples. Scientists who tried to test for these deficiencies could not create them. Why? Because bacteria in the gut formed an ample supply of these vitamins.

Or examine vitamin C. A single ounce will meet our needs for about 2 years. Despite a denatured diet of deranged and depleted foods, most Americans get enough vitamin C from vegetable salads, slaws and fruits to meet needs. Scurvy hasn't been observed in ages, though some symptoms of vitamin C deficiency have been noted in smokers.

Americans think in terms of deficiencies when, as Dr. Reuben says, almost no American physician has ever witnessed a case of beriberi, pellagra, rickets, scurvy or other disease due to vitamin deficiency.

1.1.3 Toxemia, Not Deficiencies, Causes Most Diseases

We Hygienists recognize that deficiency is not the problem nearly so much as is toxemia. The reason why toxemia and not deficiency is the cause of symptoms is twofold. First, some vitamins are depleted because they play a role in the body's detoxification of harmful substances within. Vitamin C is a notable example of this. Secondly, drugs and drug-like substances, such as coffee, teas, colas, aspirin, medications, junky foods, sugar, alcohol, birth control pills and, in fact, all non-food substances, interfere with the body's absorption and/or utilization of vitamins and other nutrients. Also, certain foods contain toxic substances and should not be consumed. Notable examples of this are foods containing mustard oil—onions and garlic.

The causes of symptoms of ill health that are blamed on vitamin and mineral deficiencies are really drugs and drug-like (toxic) substances ingested—and not vitamin or mineral deficiencies at all! This is a key fact to keep in mind. So, instead of prescribing food supplements or recommending certain foods containing large amounts of certain vitamins (or minerals), which is legally outside the purview of non-physicians anyway, the Hygienic practitioner will simply have the client eliminate the causes of toxemia and consume a wholesome natural diet that contains no toxic substances. Not only will the real causes of disease symptoms be removed and health be regained, but also a natural diet of all or mostly raw foods

of our biological adaptation will supply ample amounts of all the vitamins we need—without the expense or harmfulness of supplements.

Let's look at vitamin B-12 as an example. Its insufficiency results in pernicious anemia. Most sufferers are meat-eaters who obtain B-12 from their diets. So what gives?

Toxemia has impaired the body's ability to absorb vitamin B-12. The body has numerous substances that are engaged in active transport of nutrients from one medium to another through separating membranes. The transport mechanism for vitamin B-12 is called *intrinsic factor*. It is loss of this factor that accounts for B-12 deficiency and anemia. Pernicious anemia is due to toxemia, not deficiency. A fast will restore the lost faculty in almost all cases, and the anemia disappears even before the end of a fast! Such are the powers of the body when liberated from the baneful influences of toxicity.

Vitamins are absolutely essential in our diet—make no mistake about that. But, if we're on a proper diet of mostly fruits with some vegetables, nuts and seeds, we do not have to worry any more about vitamins or other nutrients than we have to worry about each heartbeat, the secretion of bile, or millions of other physiological processes.

1.2 Hygienic Perspectives On Vitamins Compared With Medical Perspectives — Marti Fry

As this is a course not just in nutritional science, but also in Natural Hygiene, or Life Science, it is appropriate that we point out how the Hygienic perspective on the subject of vitamins differs from the generally accepted conventional perspective.

1.2.1 Attempts To Be Scientific

Thanks to scientific research and experimentation, we have learned a great deal about vitamins (and other nutrients). In fact, thanks to the efforts of "science," we have "discovered" the existence of vitamins. We are now able to make a large variety of statements about vitamins—their functions in the body, approximate amounts needed and many other interesting facts.

However, it should be kept in mind that "science" or technology is also responsible for the refining and processing of foods that led to the discovery of vitamins. What the texts fail to note overtly is that many humans (and animals) have suffered (and, in some cases, still suffer) because of the tampering with foods by food industries, who are usually in intimate association with the scientific laboratories. Oftentimes the scientific studies done relative to nutrition are done in laboratories and research centers owned, operated and/or supported by the food processing and refining firms.

The point is that "science" does not always do the favors for humanity that they lead most of us to believe they do. Much suffering has stemmed from "scientific meddling" in the regular order of nature. This is not to condemn the efforts of scientists as much as it is to enlighten students of nutritional science of certain realities. We are not saying that scientists should stop studying phenomena, but that their approach and motives ought to be changed so that humans are truly benefitted by their efforts instead of allowed to believe they are benefitted while much suffering and harm is done. A shockingly high portion of scientific study is done to discover new drugs (poisons) to "cure" diseases, when, in fact, diseases cannot be "cured." The causes of disease must be removed and then the body will spontaneously heal without interference by drugs, medications, herbs, colonies or anything else.

1.2.2 The Scientific Approach to Vitamin Study

A look in physiology and nutrition texts shows that, while many facts about vitamins have been discovered, much more is unknown than is known. Not only that, but much of what is "known" is based on studies in which many animals and some humans have had to suffer. The rationale is that, in the long run, a greater number of living creatures, especially humans, will suffer less due to the greater store of

knowledge.

However, this rationale is to be seriously questioned because the reality is that humans suffered less disease before "science" became so advanced and before technology started refining rice and flour and sugar and marketing these products, along with milk and other unwholesome foods, to the people of the world. In other words, humans, in their pristine state, do not need the supposed benefits of so-called "science" to maintain radiant, sickness-free health. Fresh, untampered-with raw foods of our biological adaptation, not from the food industries, but from the garden and trees, will amply provide all our needs without the need for scientific studies. We certainly do not object to studies that uncover interesting information for our entertainment and use, but we do object to the thinking that we are dependent on and forever grateful to "science" for making it possible for us to live healthfully. We can live much more healthfully without science—at least the way science's priorities stand today.

This is the basis of Natural Hygiene. It involves a simple, wholesome lifestyle and diet that is in full harmony with our needs. Diseases will not occur if the simple, basic laws of life are not violated. If orchards predominated our lands instead of cattle, drug industries, food industries, chicken farms and dairy farms, etc., it would be a lovely and healthful world!

Life Science is, however, scientific. The basic laws of life and principles of Life Science are all provable in scientific laboratories. Many have already been proved. There is absolutely nothing unscientific about Hygiene. In fact, the attempts of so-called "scientists" to discover drugs to "cure" diseases is unscientific in that these efforts are not based on the laws of life. As stated earlier, the ingestion of drugs and medications can result in only harm and can lever, under any circumstances, bring about true health.

As stated in Lesson 5, a tiny cell has more intelligence than a team of scientists seeking "cures."

1.2.3 The Deficiency Approach to Vitamin Study

Perhaps the most revolting aspect of the medical/scientific approach to vitamin study is the preoccupation with deficiencies, and especially with deficiency diseases. The grotesque photos in texts of people suffering with various "deficiency diseases" graphically illustrate the distorted perception the medical scientists have of the role of vitamins—"to prevent horrible deficiency diseases." That whole concept of "prevention" is erroneous, as has been stated in earlier lessons. Deficiency diseases are not normal or natural and do not have to be "prevented." We have only to live in accord with the laws of life and nature, and we will be healthy—as nature intended.

A conventional/medical study of vitamins, as presented in textbooks, leads people to think in terms of deficiencies when they think about vitamins. But the study of vitamins should not be a study of deficiency diseases; it should be primarily a study of their role in human nutrition. In fact, identifying individual vitamins and naming the deficiency, disease connected with the lack of each is totally unneccessary. All we really need to know is that they are present in sufficient quantities in natural foods and that we will meet our needs for them on a natural diet of fruits, vegetables, nuts, sprouts and seeds. It is also well to realize that food processing, storage and preservation destroy Vitamins in foods and that drugs and drug-like substances deplete vitamins in the body and interfere with their absorption and utilization.

2. Introduction

2.1 Definition of Vitamins

Vitamins are organic compounds which the body needs to function normally. They cannot be manufactured by the body (with few exceptions); therefore, they must be supplied by food. In their absence, disease will develop.

2.2 Discovery of Vitamins

The first vitamin was discovered in 1897 by a Dutch biologist named Eijkman. He found that when bran was removed from rice, people consuming the refined rice developed beriberi, a serious disease. Eijkman also observed that when people ate the rice with the bran intact, no beriberi resulted. This finding directed Eijkman and other scientists to chemically analyze rice for the substance which, when not present in adequate amounts, resulted in the development of beriberi. Thiamine, named vitamin B1, was discovered to be this mystery substance.

In the following years, scientists found that there are many chemicals in food which are necessary for maintenance of health. One by one, as they were discovered, names were given to these chemicals As a group, they were named "vitamins."

2.3 Sources of Vitamins

It is crucial to understand that scientists have not isolated every substance in food that is essential for normal functioning of the body. Thus, we must depend on food, not vitamin pills, for good nutrition. There is no vitamin pill that contains all the vitamins the body needs.

2.4 Function of Vitamins

Vitamins function in the body as coenzymes. To understand this function, consider an analogy. Suppose you were trying to build a house. The size of the house is strictly limited by your budget. You begin the process by buying the major raw materials: cement, wood and outdoor siding material. Once you have laid the foundation and framed the walls, you go to the store and buy all the windows you need. The number of windows is obviously limited by the spaces you have built in the walls for windows. For proper function of the house, you need windows.

Vitamins are like the windows in the house. Your body has a need for vitamins (windows) when it is trying to manufacture something: new tissue, energy, etc. (a house). Your body determines the exact amount it wishes to produce and brings together just enough raw materials for the purpose of construction (cement, wood, etc.). The body manufactures the necessary amount of apoenzyme (window frame) to combine with the vitamin coenzyme (window) to form an active enzyme. The active enzyme then makes a chemical reaction progress quickly (it catalyzes the reaction) leading to the formation of the desired end-product.

2.5 Vitamins Are Inert

"Vitamin function" is a commonly used phrase, as is "vitamin action." Yet these expressions convey a misconception Vitamins cannot act, since they are inert chemical substances. In any and all physiological processes, it is the body that acts. Vitamins are used by the body for many purposes. Usually, vitamins combine chemically with other substances, thereby fulfilling the mandate of the body. It is crucial to remember that it is the body that acts on the vitamin, not the vitamin that acts on the body.

2.6 Vitamins Work Together and With Other Nutrients

Although this lesson discusses vitamins exclusively, it is important to realize that vitamins do not function alone or in a vacuum within the body. Vitamins work together; for instance, production of energy by the body when food is burned in the cells depends not only on vitamin B1, but also on vitamins B2 and niacin.

Furthermore, vitamins work together with all other nutrients such as fats, carbohydrates and proteins. For instance, vitamin B6 is needed for the normal metabolism of protein. So, even though this is a lesson on vitamins, don't think of vitamins alone when you consider the functioning of the body. Vitamins are only one small part of the metabolic machinery of the body.

3. A Study Of Each Individual Vitamin

The discovered vitamins will be studied one by one. You will learn about their discovery, measurement, chemistry, physiology, functions, requirements, sources, effects of deficiency and effects of excess.

3.1 The Fat-Soluble Vitamins

Vitamins can be categorized according to their properties. The two basic groupings of vitamins are the fat-soluble vitamins (A, D, E and K) and the water-soluble vitamins (vitamin C and the B-complex vitamins).

Certain common characteristics distinguish the fat-soluble vitamins from the water-soluble vitamins:

1. Fat-soluble vitamins are absorbed into the body as fat and with fat and are soluble in fat solvents (alcohol and ether), whereas water-soluble vitamins are soluble in water.
2. Fat-soluble vitamins are excreted mainly by the fecal pathway, whereas water-soluble vitamins are excreted via the urinary pathway.
3. A text which states that the fat-soluble vitamins are stored in the body but that water-soluble vitamins are not goes on to state in a later chapter that vitamin C, a water-soluble vitamin, can be stored. They state, "It has been shown that human beings are able to store some vitamin C; healthy, well-fed subjects store about 1500 mg. On vitamin C deprivation diets, these stores are used at an average rate of three percent of the existing reserve (pool) per day and supply the body with vitamin C for a period of about three months." As you can see, significant amounts of this vitamin can be stored in the body.

3.1.1 Vitamin A

a. *Discovery*. This fat-soluble vitamin was discovered by McCollum and Davis of the University of Wisconsin and by Osborne and Mendel of Yale University in 1913. They found that rats on a diet with lard as the only source of fat developed eye problems and failed to grow. It was later found that a shortage of carotene, the yellow pigment of plants, led to the development of these problems. Carotene is converted into vitamin A within the organism.
b. *Measurement*. Vitamin A is measured in international units. A complicated formula exists whereby micro-grams (1/millionth gram) of vitamins are converted into international units (IUs). Amounts of vitamin A in foods and requirements for this vitamin are expressed as IUs.

c. *Chemistry*. Vitamin A is relatively stable to heat but is easily destroyed by ultraviolet radiation (as in sunlight). Chemically, it occurs in many forms: retinal, retinol and retinoic acid.
d. *Physiology*. Most dietary vitamin A is in the form of carotene, the yellow pigment of plants. About half of the carotene consumed is converted into vitamin A in the body and the other half is utilized as a hydrocarbon. Because vitamin A is fat-soluble, if the diet is devoid of fat, or if too little bile is secreted by the liver (bile is needed to digest fat), or if too little thyroid hormone is secreted, there will be poor absorption of vitamin A in the intestines. This vitamin is stored in the liver.
e. *Functions*. Vitamin A is used by the body in many important ways. The body needs it to maintain normal vision in dim light. Vitamin A is also needed for synthesis of mucus, a secretion the body uses to maintain the health of membranes lining the eyes, mouth and gastrointestinal, respiratory and genitourinary tracts. When enough vitamin A is present, when other nutrients are sufficient, and when the body is not toxic, these membranes will be in a high state of health. However, if there is not a vitamin A deficiency, taking more of this vitamin will not protect the body from diseases nor "cure" diseases. This is a myth that has been scientifically disproven many times.
   Vitamin A is also needed for normal skeletal and tooth development, for formation of sperm, for the normal progression of the reproductive cycle of the female, for formation of the adrenal hormone cortisone from cholesterol, and for maintenance of the stability of all cell membranes.
f. *Requirements*. Male adults need 5000 IUs, female adults 4000 IUs, pregnant or lactating females 5000 IUs and infants about 1/10th the adult requirement of vitamin A per day. Infant needs are easily supplied by breast milk.
g. *Sources*. Healthful sources of vitamin A include dark green leafy vegetables (lettuce and other greens), green stem vegetables (broccoli, asparagus), yellow or orange vegetables (carrots, etc.) and yellow or orange fruits (peaches, cantaloupe, etc.).
h. *Effects of deficiency*. A deficiency of vitamin A is rare in the U.S. and is usually only seen in chronic diarrhea from colitis and other such diseases, liver disease or use of mineral oil. A deficient person manifests night blindness and degeneration of membranes (eye, nose, sinuses, middle ear, lungs, genitourinary tract).
i. *Effects of Excess*. Intake of excess vitamin A results in toxicity (poisoning), causing a loss of appetite, increased irritability, drying and flaking of skin, loss of hair, bone and joint pain, bone fragility, headaches and enlargement of liver and spleen. An overdose of this vitamin is about 50,000 IUs per day in adults and 20,000 IUs in infants.

3.1.2 Vitamin D

a. *Discovery*. Vitamin D was chemically isolated in food in 1930. For hundreds of years previous to the 20th century, people had used cod liver oil to supply, a factor which the body needed to maintain normal bone structure. Scientists in the 1900s were able to identify vitamin D as the necessary substance.
b. *Measurement*. Vitamin D requirements and the amounts present in foods are expressed in international units. One international unit (IU) of vitamin D is equal to 0.025 meg (a meg is one millionth of a gram) of vitamin D.
c. *Chemistry*. Chemically, vitamin D is very stable. Neither heat nor oxygen will destroy this substance. Vitamin D is produced when the skin (or flesh) of animals is exposed to ultraviolet light.
d. *Physiology*. Like vitamin A, vitamin D is fat-soluble. Therefore, bile salts are needed for absorption. Vitamin D is stored mainly in the liver. Significant amounts of this vitamin are formed by the skin of human beings exposed to sunlight.
e. *Functions*. The body needs vitamin D to maintain normal calcium and phosphorus metabolism in the body and to maintain the health of bones and teeth. With adequate D, the body is able to regulate the absorption of calcium and phosphorus from the intestines and the amount of phosphorus eliminated through the kidneys.

f. *Requirements*. Men, women and children need approximately 400 IUs of vitamin D per day. Moderate exposure to sunlight allows the body to produce all the vitamin D it needs. In the summer the body produces excess vitamin D and stores it in the liver. In the winter, when there is less sunlight, the body draws upon the stores of D in the liver to maintain normal vitamin D metabolism.
g. *Sources*. Clothing prevents formation of D in the skin with sunlight exposure, and window glass, fog and smog may also interfere. There is no scientific evidence, however, that sunlight exposure will not allow the body to produce sufficient vitamin D if the skin is exposed to light for enough time. One-half hour per day in the warm months should suffice.
h. *Effects of deficiency*. A deficiency of vitamin D will, result in rickets in infants and osteomalacia in adults. The body cannot maintain normal bone structure when too little vitamin D is present. Rickets is characterized by soft and fragile bones, especially in the legs; curvature of the spine; enlargement of certain joints; poor development of many muscles; irritability and restlessness; poor dental structure; and abnormality of the blood. Osteomalacia also is characterized by soft bones, plus leg and lower back pain, general weakness, and fractures that occur without significant trauma.
i. *Effects of excess*. Excess vitamin D results in nausea, diarrhea, loss of weight, frequent urination, all in mild cases; kidney damage, calcium deposits with damage to the heart, blood vessels and other tissue, in severe cases. A dose of vitamin D approximately 100 times the amount needed will cause poisoning and the above symptoms.

3.1.3 Vitamin E

a. *Discovery*. Shortage of another organic compound which dissolves in fat solvents was discovered in 1922 to result in destruction of the fetus in the uterus of animals. In 1936 vitamin E was chemically isolated as this substance.
b. *Measurement*. Amounts of vitamin E are expressed as international units (IUs). One IU is equal to 1 mg (1/1000th gram) of vitamin E.
c. *Chemistry*. Vitamin E is relatively stable but will break down on exposure to ultraviolet light and when exposed to rancid fats, lead or iron.
d. *Physiology*. Since vitamin E is a fat-soluble vitamin, bile salts are needed for absorption (see under vitamin A). Most vitamin E is stored in muscle and fat tissue.
e. *Functions*. The body uses vitamin E mainly as an antioxidant. It chemically combines with oxygen, and, as a result of this, other organic compounds are not destroyed by oxygen. Scientists think that vitamin E is also needed for production of certain essential tissues, especially red blood cells.
f. *Requirements*. The amount of vitamin E needed for normal body function is about 15 IUs per day. Fortunately, one of the richest sources of E in nature is un-saturated fats (oils, as found in seeds and nuts). This vitamin is also found in fruits, vegetables, sprouted grains and sprouted legumes.
g. *Effects of deficiency*. Symptoms of deficiency in animals continue to baffle scientists. When E is in extremely short supply, disease in many areas of the body results. There is breakdown of the reproductive system, muscular system, nervous system and vascular (blood vessel) system. But the conditions needed to produce such destruction in animals involve such extreme deficiency that scientists think no such problems develop in human beings from a dietary deficiency of vitamin E. Therefore, impotence, infertility, heart disease and other such problems in people are not from vitamin E deficiency and will not be helped by taking excess vitamin E.
h. *Effects of excess*. Excess intake of vitamin E, long thought to be harmless, has now been implicated in the causation of cholesterol deposits in blood vessels, elevated blood fat levels, interference in the blood-clotting process, enhanced growth of lung tumors, interference with vitamin A and iron, disturbances of the gastrointestinal tract, skin rashes, interference with thyroid gland function and damage to muscles. Megadoses of vitamin E are certainly not to be

considered harmless.

3.1.4 Vitamin K

a. *Discovery.* Vitamin K was discovered in 1935. A doctor in Scandinavia found that this substance was necessary for normal clotting of the blood.
b. *Measurement*. Amounts of vitamin K are expressed as micrograms, one millionth of a gram.
c. *Chemistry.* Vitamin K is the fourth of the fat-soluble vitamins (others are A, D and E). It is easily destroyed by light but is stable to heat.
d. *Physiology.* Vitamin K is a vitamin that does not need to be supplied in food. Bacteria which live in the human intestine are fully capable of producing the vitamin K needed for normal functioning of the bloodclotting apparatus. Vitamin K, being fat-soluble, is absorbed with fat and as a fat and therefore requires the presence of bile salts.
e. *Functions*. The liver produces certain organic compounds needed for the bloodclotting process. Vitamin K is required by the liver for production of these compounds.
f. *Requirements*. A dietary requirement has never been set for vitamin K because it is supplied by intestinal bacteria. A deficiency of vitamin K is unknown.
g. *Sources*. Dietary sources of vitamin K are kale and other green leafy vegetables, cabbage and cauliflower.
h. *Effects of deficiency.* A deficiency of vitamin K results in failure of the bloodclotting system, resulting in hemorrhage. This is found only in premature infants of mothers taking anti-bloodclotting drugs, in people with intestinal malabsorption and patients on sulfa drugs and antibiotics (which kill the intestinal bacteria that produce vitamin K). Intestinal malabsorption can occur as a result of liver or gallbladder disease, severe diarrhea, colitis and some other conditions; it can result in deficiency of any essential nutrient.
i. *Effects of excess*. The effects of excess vitamin K are unknown.

3.2 The Water-Soluble Vitamins

3.2.1 Vitamin C

a. *Discovery.* Vitamin C, also known as *ascorbic acid*, was isolated chemically in 1932 at the University of Pittsburgh. Feeding this organic compound was found to prevent scurvy. Almost 200 years previous to the chemical identification of vitamin C, Dr. James Lind, a British physician, found that scurvy would not occur if citrus fruits were consumed.
b. *Measurement*. Amounts of vitamin C are expressed in milligrams, 1/1000th of a gram.
c. *Chemistry.* Vitamin C and all the B vitamins dissolve in water but not in fat as with A, D, E and K. Vitamin C is more easily destroyed than any of the other vitamins. Heat, light, copper, and iron are especially destructive.
d. *Physiology.* Most forms of life synthesize the vitamin C they need and thus do not need a dietary source. However, humans do not synthesize this vitamin. When vitamin C is supplied to the body, the tissues quickly become saturated and excesses are eliminated in the urine.
e. *Functions*. The body uses vitamin C in many important ways. The main one is in the formation of connective tissue, the underlying structure of bone, cartilage, blood vessel walls and most other tissues. Without vitamin C, the body cannot rebuild injured tissue.
   There are many other important roles of vitamin C: It is needed for normal cellular metabolism and enzyme function, for the normal metabolism of iron and folic acid (a B vitamin) and for the formation of adrenal gland hormones.
f. *Requirements*. There is much controversy about the requirement for vitamin C. The recommended dietary allowance is no more than l/10th of a gram, yet Linus Pauling states that we need 100 times that amount. Scientific evidence clearly states that l/10th of a gram, 100

milligrams, is more than enough. Some evidence indicates that slightly more than this amount may be desirable. On a Hygienic diet, with its great abundance of raw fruits and vegetables, it is easy to get over 500 milligrams per day. There is certainly no need for supplements, despite the allegations of Dr. Pauling.

g. *Sources*. Vitamin C is supplied in fruits and vegetables, especially citrus fruits, tomatoes and bell peppers. Other foods also contain small amounts of this vitamin.
h. *Effects of deficiency.* A deficiency of vitamin C results in poor connective tissue structure. Symptoms include joint pain, irritability, growth retardation, anemia, shortness of breath, poor wound healing, bleeding of gums and pinpoint hemorrhages. If the diet contains enough vitamin C and these symptoms still develop, causes other than vitamin C deficiency must be searched for. Taking large amounts of vitamin C for diseases which are not the result of a vitamin C deficiency may alleviate symptoms but will not remove the cause of the problem.
i. *Effects of excess*. Excess vitamin C, even though water-soluble and so not stored in large amounts in the body, can be harmful to your health. Problems include destruction of red blood cells; irritation of the intestinal lining; kidney stone formation; interference with iron, copper, vitamin A and bone mineral metabolism; interference with the reproductive tract, causing infertility and fetal death; diabetes; and, believe it or not, scurvy. Intake of excess amounts of vitamin C, as with most vitamins, is only possible when pills or crystals are taken.

3.2.2 Vitamin B1

a. *Discovery.* The existence of vitamin B1, also known as *thiamine*, was first theorized in 1897 by a Dutch doctor who found that eating polished rice would result in a serious disease called beriberi. When unpolished and unrefined rice was eaten, however, *beriberi* did not develop. In the 1920s and 1930s, thiamine was chemically isolated from rice bran.
b. *Measurement*. Amounts of vitamin B1 are expressed in milligrams (mg), 1/1000th of a gram, or micro-grams (meg), 1/millionth of a gram.
c. *Chemistry.* Vitamin B1 is readily destroyed in the cooking process.
d. *Physiology and functions*. This important vitamin plays a crucial role in the body's energy-producing processes. In the body, when glucose is burned in the cells, energy is produced. This energy is stored when an organic substance named ATP is produced. Vitamin B1 is needed for the formation of ATP.
e. *Requirements*. The requirement for vitamin B1 is approximately 1/2 mg daily for infants and children, 1-1.5 mg daily for adults.
f. *Sources*. If mainly fruits and vegetables are eaten, as we recommend, significant amounts of vitamin B1 will be supplied. Other sources are nuts, seeds, sprouted legumes and sprouted grains. When grains are refined, much of the vitamin B1 (and other vitamins) is lost.
g. *Effects of Deficiency.* A deficiency of vitamin B1 results in serious breakdown of cellular metabolism. Manifestations of this breakdown include fatigue, emotional upsets, appetite loss, weakness, vomiting and abdominal pain, heart failure and nervous system destruction (generalized weakness and/or paralysis occur). Again, it is essential to note that there are many other causes of these problems. If the diet contains enough vitamin B1, these problems will not be helped by getting more of this vitamin.
h. *Effects of excess*. The problems which develop when excess vitamin B1 is consumed have not been investigated. We can be sure, however, that problems will result when "megadoses" are ingested.

3.2.3 Vitamin B2

a. *Discovery.* In the late 1920s and early 1930s, scientists discovered a substance in food which the body needed for normal nervous system function. This substance was chemically identified and named *riboflavin*, also called vitamin B2.

b. *Measurement*. As with thiamine, amounts of riboflavin are expressed as milligrams or micrograms.
c. Chemistry. Vitamin B2 is more stable to heat than vitamin B1, but it is easily destroyed by light.
d. *Physiology and functions*. The function of vitamin B2 is much the same as B1, although neither vitamin can substitute for the other. Riboflavin is needed for the synthesis of ATP.
e. *Requirements*. The requirement for riboflavin is about the same as for thiamine. About 1/2 mg daily is needed by infants, and 1-1.5 mg per day is needed for older children and adults.
f. *Sources*. Riboflavin is supplied by green leafy vegetables, seeds and nuts.
g. *Effects of deficiency*. Symptoms of a vitamin B2 deficiency include the eyes becoming sensitive to light, easy fatigue of the eyes, blurred vision, itching and soreness of the eyes, cracks in the skin at the corners of the mouth, purplish red appearance of the lips and tongue, and eczema.
h. *Effects of excess*. Symptoms of excess intake of riboflavin have not been clearly elucidated.

3.2.4 Niacin

a. *Discovery*. Niacin deficiency disease, called *pellagra*, was written about hundreds of years ago. It was not until the 20th century, however, that this disease was related to a dietary deficiency. This took place when a researcher placed subjects on a diet identical to that which caused pellagra-type symptoms in certain groups of people in the South. When these symptoms occurred in the experimental subjects, the researcher concluded that pellagra is a deficiency disease. Soon after, other scientists found that niacin was the missing link.
b. *Measurement*. Amounts of niacin are expressed in milligrams.
c. *Chemistry*. This important B vitamin (called B3 by some nutritionists) is more stable than most other B vitamins; it is not easily destroyed by heat, light or exposure to oxygen.
d. *Physiology*. Not all the niacin needed by the body need be supplied as niacin. Tryptophan, an amino acid (subunit of protein), is easily converted by the body into niacin. Therefore, to have a niacin deficiency, the diet must be deficient in both niacin and tryptophan.
e. *Functions*. Niacin is intimately involved in cellular metabolic reactions which release energy from the oxidation ("burning") of fats, carbohydrates and proteins. In this function it is quite similar to vitamins Bl and B2, but niacin cannot substitute for or be replaced by other B vitamins.
f. *Requirements*. The requirements for niacin are about 5-10 mg per day for infants and children and 15-20 mg per day for adults.
g. *Sources*. There are many sources of niacin in the diet: green leafy vegetables, potatoes, nuts arid seeds, to name a few.
h. *Effects of deficiency*. Deficiency of niacin leads to development of pellagra. This disease involves the gastrointestinal tract, skin and nervous system. Common symptoms include fatigue; headache; weight loss; backache; appetite loss; poor general health; red sore tongue; sore throat and mouth; lack of hydrochloric acid in the stomach (which results in anemia from vitamin B12 deficiency); nausea; vomiting; diarrhea; red, swollen and cracked skin; confusion; dizziness; poor memory and, in advanced cases, severe mental illness.
   If the diet contains sufficient amounts of niacin, and if a person suffers from any of the aforementioned symptoms, taking extra niacin will have no beneficial effect.
i. *Effects of excess*. Intake of excess niacin has been found to cause liver damage, high levels of blood sugar, unsafe levels of uric acid in the bloodstream, and gastrointestinal distress ("stomachache").

3.2.5 Vitamin B6

a. *Discovery*. A deficiency of vitamin B6, or *pyridoxine*, was first produced in animals in 1926. In. 1938, this vitamin was isolated from food and identified. In 1939, scientists synthesized it in the laboratory.
b. *Measurement*. Amounts of vitamin B6 are expressed in micrograms or milligrams.

c. *Chemistry*. Vitamin B6 is easily destroyed by light but is somewhat stable to heat.
d. *Physiology and functions*. Vitamin B6, sometimes referred to as pyridoxine, is deeply involved in the metabolism of protein. When amino acids (subunits of protein) are converted into other substances (such as tryptophan to niacin), vitamin B6 is often needed. Also, when non-protein substances are converted into amino acids, vitamin B6 is often needed.
e. *Requirements*. Infants and children require about .5-1 mg of vitamin B6 per day. Adults need about 2 mg per day.
f. *Sources*. Vegetables are the main source of vitamin B6 in the diet.
g. *Effects of deficiency*. Deficiency of vitamin B6 leads to problems in the skin, nervous system and blood in animals. It has been difficult for researchers to produce any deficiency in adult humans. In extreme experimental situations, skin disease has resulted in adults from a vitamin B6 deficiency.
h. *Effects of excess*. Generalized symptoms of toxicity (poisoning) have been recorded in rats upon intake of excess vitamin B6. Future research will certainly find damage in human beings from intake of excess vitamin B6.

3.2.6 Pantothenic Acid

a. *Discovery*. Pantothenic acid was first isolated in 1938. Two years later researchers synthesized this vitamin in the laboratory.
b. *Measurement*. Pantothenic acid is measured in milligrams.
c. *Chemistry*. It is relatively stable, yet significant amounts are lost in cooking.
d. *Physiology and functions*. Pantothenic acid is part of coenzyme A, an organic substance which plays a critical role in many cellular metabolic pathways.
e. *Requirements*. Four to seven mg of pantothenic acid per day will fulfill the body's needs in both adults and children.
f. *Sources*. Sources of pantothenic acid include fruits, vegetables, sprouted legumes and grains.
g. *Effects of deficiency*. A deficiency of pantothenic acid has been observed only in laboratory animals. This vitamin is widely available in common foods so that deficiency outside of the laboratory is unlikely. Symptoms of deficiency include vomiting, fatigue, a feeling of generalized sickness, pain in the abdomen, burning cramps, personality changes and blood abnormalities.
h. *Effects of excess*. Diarrhea is the only symptom thus far shown to result when excess pantothenic acid is taken.

3.2.7 Biotin

a. *Discovery*. The discovery of biotin was made when large quantities of raw eggs were fed to animals before World War II. Scientists found that raw egg whites contain avidin, a substance that inactivates biotin. The diet high in raw eggs therefore led to development of deficiency symptoms in animals.
b. *Measurement*. Amounts of biotin are expressed in micrograms.
c. *Chemistry*. This vitamin is stable to heat and light but is sensitive to oxygen.
d. *Physiology and functions*. The body uses biotin as coenzymes needed for normal metabolism of protein, carbohydrate and fat.
e. *Requirements*. The requirement for biotin is about 150 micrograms per day for adults.
f. *Sources*. Nuts and seeds are high in biotin. Another excellent source is sprouted legumes.
g. *Effects of deficiency*. Biotin deficiency is produced only when many raw eggs are consumed. Symptoms which develop include skin problems, fatigue, muscle pain, lack of appetite, nausea and blood abnormalities.
h. *Effects of excess*. The effects of excess biotin have not yet been described.

3.2.8 Vitamin B12

a. *Discovery.* Vitamin B12 was not identified until 1955. Long before, in the early 1920s, foods high in this vitamin (such as liver) were used in cases of *pernicious anemia*.
b. *Measurement*. Amounts of this vitamin are expressed in micrograms.
c. *Chemistry.* Vitamin B12 is not damaged by heat, but it is inactivated by light. Very little is lost in cooking.
d. *Physiology.* The physiology of vitamin B12 is complex. To be aborbed into the bloodstream, vitamin B12 must combine with an organic substance secreted by the stomach called *intrinsic factor.* The resultant complex can then be absorbed only at the far end of the small intestine, the terminal ileum. Disease of the stomach often results in deficiency of intrinsic factor. This condition, not a dietary deficiency of vitamin B12, is called pernicious anemia.
e. *Functions*. All cells in the body need vitamin B12 to function normally, but certain tissues need more of this vitamin than do others. These include the gastrointestinal tract, nervous system and bone marrow (where blood cells are produced).
f. *Requirements*. Infants and children need about .5-2 meg of vitamin B12 per day, with the larger amounts needed in later years. Adults need about 3 meg per day; 1 meg additional is recommended for pregnant and lactating women.
g. *Sources*. Vitamin B12 should perhaps be called the "vegetarian's nemesis," since standard nutrition teaches that it is only present in animal foods (meats, eggs, dairy products) and that none is found in vegetables, fruits, seeds, nuts, sprouted legumes or sprouted grains. Yet vitamin B12 is produced by bacteria that are so widely prevalent in nature that many or most vegetarian foods contain small amounts of vitamin B12. Also, scientific evidence has shown that bacteria in the human intestine can produce vitamin B12. Although vegetarians often have low blood levels of vitamin B12, there has almost never been a well-documented case of a vegetarian who was sick from a dietary vitamin B12 deficiency. Therefore, there is no need for the subject of vitamin B12 to be a "vegetarian's nemesis."
h. *Effects of deficiency.* When the body has a poor supply of vitamin B12, pernicious anemia will result. Fewer red blood cells are formed in the bone marrow. Advanced cases of vitamin B12 deficiency show nervous system disease characterized by "pins and needles" sensations in the hands and feet, poor balance and mental depression.
i. *Effects of excess*. The effect of taking too much vitamin B12 has not been described.

3.2.9 Folic Acid

a. *Discovery.* An unknown organic substance, distinct from all other vitamins, was found in the early 20th century to be necessary for animal health. In the 1940s the chemical structure of folic acid was described. The name comes horn *folium*, Latin for leaf, since folic acid is present in such great amounts in green leaves.
b. *Measurement*. Amounts of folic acid are expressed in micrograms.
c. *Chemistry.* Folic acid is not stable to light and heat so that large amounts are lost in cooking.
d. *Physiology and functions*. Folic acid is needed for the normal functioning of the genetic material in cells (DNA), for metabolism of protein and some other organic substances.
e. *Requirements*. Adults need about 400 micrograms of folic acid per day. In pregnancy, an additional 400 meg are needed, while in lactation, an additional 200 meg will suffice: Needs in infancy, as with all vitamins, are much lower, about 50 mcg per day.
f. *Sources*. Folic acid is best derived from green leafy vegetables and sprouted grains.
g. *Effects of deficiency.* A deficiency of folic acid will lead to anemia. If anemia is from vitamin B12 deficiency and folic acid is given, the body will be able to correct the anemia. The nervous system disease from vitamin B12 deficiency, however, will not be affected by giving folic acid.
h. *Effects of excess*. Effects of excess folic acid intake have not been described.

4. Questions & Answers

Is the conventional American diet generally deficient in vitamins, and is this the major health-destroying aspect of this diet?

> No. While the conventional American diet has been shown to be deficient in vitamins in many cases, this is not the major problem with this diet. The major problems result from excess intake of toxins, calories, fat, protein and sugar. Taking vitamin pills will have no beneficial effect on the problems resulting from the excesses in the American diet.

Should I take vitamin pills?

> A person eating a diet of whole, unrefined foods, mostly uncooked, has no need for supplements.

When the necessary amount of vitamins is supplied in the diet, will additional vitamins help?

> Definitely not. The body can use only a limited amount of vitamins as supplied in food. Excess vitamins often cause damage to the body.

Are extra vitamins needed because of stress, smoking and pollution?

> Yes, and the extra amounts are easily supplied from food.

A deficiency of a vitamin will lead to development of a certain disease, for instance night blindness and vitamin A. If the diet contains enough vitamin A and a person still develops eye disease, will additional vitamin A solve the problem?

> No. Taking vitamin A will only correct a vitamin A deficiency and the problems associated with such a deficiency. There are multiple causes of eye problems and all the other symptoms that develop when there is a vitamin deficiency.

I know that too much of vitamins A and D can be harmful, but I heard that you cannot take too much of the water-soluble vitamins like vitamins C and B. Is this true?

No. Although excesses of vitamins C and B will be eliminated rapidly from the body, there will be damage to the body before and during their elimination.

Caution: Megavitamins May Be Dangerous To Your Health by Dr. Alan Immerman, D.C.

Surprising as it may sound, vitamins—especially the fat-soluble ones—when taken in unnaturally large quantities, can be dangerous to your health. In fact, megavitamin therapy carries risks similar to those of other drugs. Just as with other medications, the taking of large amounts of vitamins can cause side effects and other more serious health problems.

For years I took large daily doses of many vitamins. I read many of the magazines which are sold in

health food stores and I believed what I read. I was convinced that large doses of vitamin C would "prevent" and "cure" colds and that some of the B-complex vitamins would calm my emotions "naturally" with no side effects. I believed that large amounts of vitamin E would prevent heart disease and delay the aging process. Fortified daily as I was, I was certain that I was doing myself a world of good, even though I didn't feel better while I was taking the supplements in such large doses.

Then it happened: I put down my health food store paperbacks long enough to read a few scientific textbooks and journal articles. I studied the biochemistry of vitamins (I have a B.S. in chemistry) and I read scientific studies which investigated the possibility of side effects from taking vitamins. I was more than a little surprised by what 1 found.

First, what is a "megavitamin"? I consider it to be a level of dosage that one could never get from food. For example, if you ate a large amount of fruits and vegetables, you could get 500 to 1,000 milligrams (.5 to 1 gram) of vitamin C per day from food. Although the RDA (recommended dietary allowance) is only 60 milligrams, it is possible to get ten, even 20 times this amount from foods. Therefore, in the case of vitamin C, I would use the term megavitamin to describe something in the neighborhood of 2 grams per day. While this may seem extraordinarily large, bear in mind that some self-appointed authorities recommend that we take 5-10 grams of vitamin C per day.

In large doses, vitamins act like drugs, not nutrients. If you eat more than the amount required, your body won't be able to use them. In its wisdom, the body will try to eliminate the excess, but too much of an overload may cause the excess to remain in the bloodstream, causing drug-like effects.

Megavitamin proponents argue that the requirement for vitamins differs from one person to another (biochemical individuality). This is true. But the conclusion that some people must, therefore, take megadoses of vitamins is false. Taking the recommended dietary allowances of vitamins fulfills the body's needs since the RDAs have been formulated with full awareness of biochemical individuality. The RDA compensates so well for the fact that some people need more of a certain vitamin that it has even been occasionally criticized for being too generous, for instance in the RDA for vitamin E.

Megavitamin proponents claim that large amounts of vitamins are used as nutrients. A nutrient is a substance that is used in normal physiological processes and causes no harm to the system. Other chemicals, such as drugs, are not used by the body and do cause harm. Scientific studies have shown that megavitamins can cause harm to the body. Therefore, I classify them as drugs.

Our bodies are capable of using nutrients supplied in the proper amounts. But when a nutrient is supplied in too great an amount, havoc is the result. We have all heard of the rare cases where someone has drunk too much water and died. The same is true with vitamins: too much of a good thing is harmful.

Experiments such as the following have often been repeated. Megadoses of vitamin B3 (niacin) were given to large groups of experimentees for a number of weeks at a time. Before and after the dosage period, blood was drawn from the subjects and analyzed for many chemicals. At the end of the experiment, scientists found that up to 45% of the subjects had liver damage, 50-66% had abnormally high levels of blood sugar, 62-78% had unsafe levels of uric acid and 20-40% had "gastrointestinal distress" (stomachaches). Though it may be hard to swallow that our old friend niacin is harmful in large doses, swallow it we must if we want to align our beliefs with reality.

Niacin has been recommended in large doses to lower blood cholesterol levels and to control schizophrenic symptoms. I suggest that better ways be found to deal with these problems (such as eating less meat and eggs to lower cholesterol).

Megadoses of vitamin C are also potentially harmful. Consider the following side effects: destruction of red blood cells; irritation of the intestinal lining; kidney stone formation; interference with iron, copper, vitamin A and bone mineral metabolism; interference with the reproductive tract, causing infertility and fetal death; diabetes; and something called rebound scurvy. Scurvy is vitamin C deficiency disease. If you take large amounts of vitamin C for a long time (many months, at the least), your body will increase

its level of elimination of vitamin C (more evidence that your body doesn't want it around). If you then decide suddenly to stop taking vitamin C cold-turkey you will become deficient in this vitamin because it takes a period of time (many weeks sometimes) for your body to adjust downward its level of elimination of vitamin C. Does this sound safe? I would rather have a cold any day than the possibility of the side effects of megadoses of vitamin C. Besides, a cold is actually a detoxification process that shouldn't be interfered with by use of anything, even it is a supposedly friendly vitamin.

The third vitamin that has been investigated in depth is vitamin E. Megadoses of this vitamin (over about 100 IU per day) have been found to cause deposits of cholesterol in blood vessels; elevations of blood fat levels; interference with the bloodclotting process; enhanced growth of lung tumors; interference with absorption of vitamin A and iron; gastrointestinal disturbances; skin rashes; interference with thyroid gland function; and damage to muscles. Thus, megadoses of vitamin E also function as drugs, complete with side effects.

All nutritionists recognize the hazards from large doses of vitamins A and D: Megadoses of vitamin A have been known to cause the following negative effects: fatigue; generalized feeling of sickness; stomach discomfort; bone and/or joint pain; severe headaches; insomnia and restlessness; night sweating; loss of body hair; brittle nails; constipation; irregular menstruation; emotional instability; dry scaly and rough skin and other effects. Megadoses of vitamin D can cause nausea, diarrhea, weight loss, kidney damage and other problems.

I have no argument with those who claim that megadoses of vitamins will change the way you feel. They may, although in most cases there is no solid scientific proof that they will. But the way you feel is not in itself a valid criteria with which to judge megavitamins. If it were, then we could endorse drugs as completely beneficial. Both drugs and megavitamins may change symptom patterns. If you take vitamin C, there is a slim chance that you may experience a reduction in cold symptoms due to an antihistamine (not nutritional) effect. If you have arthritis arid take cortisone, you will experience a reduction in joint pain. But both these substances have side effects; and neither of these substances are getting at the cause of the health problem, just the symptoms. In fact, both are causes of other problems!

And there is even more: By treating yourself with vitamins, you may mask a serious disease until it has progressed to the point of no return. For instance, if you are anemic from vitamin B12 deficiency and you take folic acid, the folic acid will correct the anemia but you will have continuing subtle nervous system damage from the B12 deficiency.

Megadoses of vitamin C interfere with tests for sugar in the urine (a common indicator of severity of diabetes) and for blood in the stool (a test for cancer of the large intestine, among other things).

Once you find out what your problem is, I have one bit of advice: Don't try megavitamins for a solution. If they give you any relief, it will only be symptomatic: the cause of your problem will remain untouched. And the megavitamins may cause even further disruption of your health because of the many harmful side effects they can have.

Article #2: Vitamins And Disease Causation By Marti Fry

Conventional medical practice attributes disease causation to: 1) bacteria or viruses; 2) hereditary or genetic disorders; or 3) deficiencies of vitamins or other nutrients. They do not blame disease causation on the habits and lifestyles of people who get diseases—except in the cases of deficiency diseases. Food

supplements are supposed to solve the problems ("cure" the diseases) resulting from nutrient deficiencies. Sometimes nutrient-rich foods are also or instead recommended. For example, oranges or tomatoes may be recommended in cases of vitamin C deficiency or carrots or other orange foods for vitamin A deficiency, etc. However, with the popularity of food supplements today, especially among "alternative health groups," but also among conventional practitioners, pills are more often prescribed or recommended.

The error made by conventional medical and "health" practitioners is even worse than prescribing or recommending vitamin pills. They do not recognize that the true cause of diseases in most cases is not bacteria, viruses, hereditary or genetic disorders or nutrient deficiencies—rather, diseases result from enervation and toxemia; that is, lowered nerve energy, retention of toxic metabolic wastes, and consumption of toxic substances (wrong foods, drugs, etc.).

Even the "alternative healers," though many recognize that diseases are body-created processes for elimination of toxins, think more in terms of nutrient deficiencies and food supplements than of removing the true causes of most diseases—body toxicity. Supplying the normal needs of life as recommended by the Life Science health system while simultaneously removing the causes of diseases is the only way health can be restored effectively and permanently.

The idea of getting more vitamins, protein or other nutrients to prevent or overcome diseases is erroneous. Most diseases are not deficiency diseases as so many people believe today. Also, vitamins are not specific detoxifying substances that assist the body in eliminating its pathogenic toxic load. In massive amounts they are like drugs that add to the body's toxic load and must be expelled. In normal amounts as supplied in wholesome, raw foods, they play many varied roles. It is really foolish to tamper with normal body functioning in any way, including the use of vitamin supplements which do not go to the root—do not deal with the cause—of disease any more than do drugs or medications.

Article #3: Why RDAs Are Too High by T.C. Fry

Before entering into a discussion of how RDAs are set, it is appropriate to distinguish between Recommended Dietary Allowance (RDA) and Minimum Daily Requirement (MDR). These are not the same, though MDRs are usually set unduly high, as are the RDAs.

RDAs are set by the Food and Nutrition Board of the National Research Council. Minimum Daily Requirements are mandatory on labelling of processed foods. They are required by the FDA, who has published the MDRs. MDRs generally closely parallel the RDAs. Supposedly the minimum requirement is the least amount you can ingest and adequately meet need. RDAs are recommended as intake to be on the safe side. RDAs are, therefore, higher than MDRs.

In setting RDAs, the NRC has criteria for each nutrient, vitamin or mineral. For instance, it figures vitamin C need based on what is required as a minimum. Say this minimum is set at 15 milligrams daily, which is the generally recognized minimum in much of the world. The NRC figures there is perhaps a 30% difference between individuals in their vitamin assimilation abilities. Thus they add on 30% to this minimum.

Further, the NRC gives a biologic value of about 2/3 to dietary vitamin C (could this be due to cooking or due to synthetic C or both, making 1/3 not available?) Instead of 19.5 mg, we now have 30 mg. As a margin of safety, the recommendation allows an extra 100%.

Thus, a man of say 154 pounds is said to need 60 mg of vitamin C daily. This is the RDA when, in point of fact, the needs of a healthy person are amply met on an intake of 15 to 20 mg daily. But, as this water-soluble vitamin in its natural form is easily excreted, there is no great danger in an intake of 60 mg daily. In fact, a natural diet furnishes 200 to 500 mg daily.

While establishing an RDA some four times in excess of what a healthy individual really needs is not harmful in the case of natural vitamin C, in other cases the RDA is positively pathogenic! This "generosity" amounts to recommended overfeeding. In people's minds the RDA becomes a mandatory minimum and they add on perhaps another 100% just to be sure! In the case of protein this is a great contributing cause of widespread disease!

As a Hygienist, be ever cognizant of those principles that go like this: The healthier you are, the more efficient your body becomes up and down the line. On a proper diet the biological value of nutrients is at or near 100%! The food will not be deranged by cooking or processing. Further, it will be 100% in accord with human digestive adaptations and capabilities. The healthy person will have about 100% uptake of dietary intake up to an optimum point and nearly 100% usage. Hence most RDAs are some 200% to 1,000% too high at the least!

Why get into a meaningless numbers game when all that we need in nutrients to repleteness is amply furnished with a great margin of safety by a modest diet consisting mostly of fresh fruits with some vegetables, nuts, seeds and perhaps some dried fruit. All, of course, must be eaten in the raw or live state to assure nutrient integrity on the one hand and non-toxicity on the other.

Article #4: Vitamin B-12 And Your Diet By Dr. Alan Immerman

If you do not eat animal foods of any kind your fears about dietary deficiency in this highly publicized vitamin will be allayed by this report.

Do we get enough vitamin B12? This is a major concern to people who consume no animal foods (vegans). Much of their worry arises from the wide publicity given to statements like the following which appeared in the prestigious journal, *Nutrition Reviews*: "Strict vegetarianism in western countries is a form of food faddism which can have serious consequences" due to the possibility of a vitamin B12 deficiency. What are the facts?

First of all, it cannot be said that vegans consume too little vitamin B12 unless it can be shown they have a definite deficiency of this vitamin. Therefore, in order to understand the facts, we must decide how we will determine who is deficient. To be diagnosed as having a dietary deficiency of vitamin B12, all the following five criteria must be fulfilled:

1. Intake of less than the minimum daily requirement of vitamin B12.
2. Abnormally low blood vitamin B12 level.
3. Normal absorption of vitamin B12.
4. Presence of sickness specifically associated with a vitamin B12 deficiency; a specific type of anemia (megaloblastic) and/or nervous system degeneration.
5. Elimination of the signs and symptoms of such sickness following consumption of a small amount of vitamin B12-containing food.

The finding of a vitamin B12-deficient state without fulfillment of every one of these criteria cannot be blamed solely on the diet. This is because all of the following can also cause a vitamin B12 deficiency:

stomach disease (interferes with production of intrinsic factor, a chemical necessary for normal absorption of vitamin B12), intestinal disease (may interfere with normal absorption), kidney or liver disease (may increase loss of vitamin B12 from the body), use of alcohol or tobacco, use of some drugs such as neomycin and oral contraceptives and a multitude of other problems. Unless these problems are ruled out by fulfillment of the five criteria, a dietary cause of a vitamin B12 deficiency cannot be diagnosed.

Let's take a few examples. Say a 58-year-old man on a vegan diet goes to his doctor with signs of nervous system disease. It comes out in the history that this person is a vegan so the doctor presumes that the disease is from dietary vitamin B12 deficiency and prescribes large doses of vitamin B12 supplements. But, without investigation of this person's ability to absorb vitamin B12, his disease cannot be said to come from dietary deficiency alone. He could have pernicious anemia—deficiency of the intrinsic factor needed for absorption.

Or consider the vegan who has routine blood analysis done and it is found that his vitamin B12 level is low compared to the standard American range. The doctor would probably warn this individual of the grave consequences of continuing on his diet, even though this person feels fine. This individual cannot be classified as vitamin B12-deficient, however, because he has no symptoms of the diseases associated with a vitamin B12 deficiency.

As a third example, let's consider the most complex case: a vegan with a vitamin B12 deficiency-associated illness, normal absorption as reflected by use of routine absorption testing (the Schilling test) and disappearance of symptoms after ingestion of vitamin B12 supplements of routine dosage. Wouldn't this be a clear case of dietary vitamin B12 deficiency? Not necessarily—it could be a case of poor absorption not revealed by routine testing. A case like this occurred where the fault in absorption was not detected until sophisticated methods were used.

Short of sophisticated testing available only in research centers, the only way this fault in absorption, and probably many other similar faults, would be discovered is by experimental oral administration of small amounts of vitamin B12, as opposed to the large amounts routinely used. For this reason, fulfillment Of criterion No. 5 (positive response to consumption of small amounts of vitamin B12) is essential for a diagnosis of dietary B12 deficiency.

As simple and full of common sense as are these five criteria, we see many cases in the medical literature in which one or more of them have not been fulfilled. For example, Smith in 1962 investigated twelve vegans and found vitamin B12-associated illness in three of them.

He did not, however, check to see if they were able to absorb vitamin B12 efficiently; thus his diagnosis of dietary vitamin B12 deficiency is unconvincing. There are even cases presented as dietary vitamin B12 deficiency in which no accurate diet history is reported to show that no vitamin B12-containing foods have been eaten.

Verjaal, et al., in 1967, presented the case of a vegan with nervous system disease which the researcher attributed to the diet without checking absorption or the response to small amounts of oral vitamin B12. Connor, et al., in 1963, discussed two cases in which he also failed to investigate absorption.

In preparing this article, I have reviewed every article discussing cases of reported dietary vitamin B12 deficiency, and I can say that lack of fulfillment of all five criteria, as in the articles just described, is the rule, not the exception.

On the other hand, many studies have reported vegans with normal vitamin B12 status and complete health. Hardinge, et al., in 1954, studied 26 vegans and found them to be healthy. Ellis, et al., in 1970, studied 26 vegans and found the same.

Roberts, et al., in 1973, investigated 322 Indian vegans during pregnancy. All but one were perfectly healthy and this one was not studied to determine whether she could normally absorb vitamin B12. Sanders, et al., in 1978, studied 34 vegans and found no sickness.

The conclusion must be that the vast majority of the studies which have reported abnormal vitamin B12 status in vegans have not been thorough enough to prove the problem was from the diet only, and that, on the the other hand, many studies have found normal vitamin B12 status in vegans. Though this is hard for a western nutritionist to accept, no Indian doctor would have the slightest problem with it.

Indians, for the most part, are not pure vegans, as they consume small amounts of dairy foods. These amounts, however, fall far below the amounts that would be needed to supply adequate amounts of vitamin B12 if western dogma is valid.

Yet, in India, vegetarians have lived for ages and have begotten and reared healthy children who, in turn, have never eaten fish, fowl or meat. There is no evidence to suggest that such a vegetarian population consuming adequate lactovegetarian food is any way different from the non-vegetarians.

As Dr. David Reuben points out, the news that an almost-vegan diet is dangerous "will come as a surprise to 500,000,000 Hindus, most of whom don't eat any meat or animal products at all from the moment they are born until the moment they die (with the exception of mother's milk for a while). The Hindu religion has been around for over 10,000 years, or about 98 centuries longer than modern American medicine.

But how do vegans get their vitamin B12? Since it is produced only by bacteria, and vegans don't eat the animals that had the bacteria growing in their second stomach (rumen), what is the source of this vitamin B12?

There are no definite answers to this question, but the fact that most vegans are healthy shows one of the following answers must be applicable: Absorption of the vitamin B12 routinely produced by bacteria living in the intestine (supposedly they live in a area where the vitamin cannot be absorbed, but an adaptation may occur in vegans); no loss of vitamin B12 from the body, thus no need for additional dietary vitamin B12; ingestion of vitamin B12 in water (from the well or the distiller) due to bacterial contamination; accidental ingestion of insects or bacteria containing vitamin B12; presence of vitamin B12 in root vegetables due to absorption of vitamin B12 from the soil where it was produced by bacteria; presence of vitamin B12 in soil on poorly washed root vegetables; presence of vitamin B12 in seaweed (all but green) and/or contamination of plant foods with vitamin B12 produced by bacteria.

It is true that vitamin B12 is produced only by bacteria, but these bacteria are almost everywhere, and for this reason vitamin B12 has been found in some samples of many vegetables.

A vegan diet, therefore, does not have "serious consequences" as threatened by *Nutrition Reviews*; it is quite the reverse, as contrariwise it has such "beneficial consequences" as vegans not having to fear any risk of ever suffering cardiovascular disorders or colon and breast cancer. The low fat intake of vegans minimizes the chance of these diseases. The threat of a vitamin B12 deficiency is more often than not hypothetical rather than actual.

It is important to emphasize that deficiency may be present only if a person has low blood vitamin B12 levels plus illness associated with vitamin B12 deficiency. Indications of a low vitamin B12 level by itself will not interfere with attaining a long and healthy life with full capacity for normal reproduction. The contrary has never been proven to be so, unless the deficiency is accompanied by illness as discussed above.

Article #5: Do We Need To Take Vitamins? By Alan M. Immerman, D.C.

A few months ago I picked up a copy of a promotional magazine in a health food store. This magazine, *Better Nutrition*, contained an article entitled "The Care and Feeding of Vitamins," which addressed itself to the need for taking daily vitamin supplements. Since this is a subject about which I get many questions, I thought I would discuss this issue. The article on vitamins was in a question and answer form; I will give an alternative opinion in the same form.

I eat a good diet, why should I lake vitamins or other supplements?

> ANSWER: The *Better Nutrition* article (to be referred to as BN) stated that "your idea of a 'good diet' may not include all the essential nutrients" and that with pollution, stress, chronic illness, drugs and food of low nutritional value (presumably from conventional farming methods), it is reasonable that "a number of distinguished nutrition experts" believe that we should take supplements.
>
> MY ANSWER: It is no doubt true that many peoples' idea of a "good diet" is inadequate. The nutritional orthodoxy believes that enriched flour is entirely adequate even though many nutrients are removed by processing and only a few are replaced by enriching. But this does not mean that supplements should be taken, but rather that proper foods should be chosen! Also, there is no proof that pollution and stress increase vitamin needs. If drugs increase vitamin need, the obvious answer is to discontinue their use if at all possible. Drugs have many harmful side effects besides increasing vitamin needs.
>
> Also, the mention of nutritional values of foods grown with today's conventional farming methods brings up an important point. Plants synthesize all the vitamins they need from carbon dioxide, water and sunlight. Therefore, foods grown conventionally will have the same amounts of vitamins as those grown organically.
>
> Finally, in all respect for the "distinguished nutrition experts" who believe that supplements are needed, it would be far preferable to choose the proper foods; many equally distinguished experts support this position.

How much do I need of vitamins and minerals?

> ANSWER: (BN) Official recommended dietary allowances (RDAs) ... are for perfectly healthy 22-year-old men and women ... anyone not perfectly healthy and not 22 years of age may need more.
>
> MY ANSWER: This statement in BN poorly reflects the intent of the National Research Council in establishing the RDAs. The RDAs are for the vast majority of people, not for a small group. In setting these figures, the National Research Council estimated the requirements of the nutrients and then established recommended intakes in excess of requirements so as to "exceed the requirements of most individuals." The RDAs have even been criticized as too ligh in some cases! In any case, it is quite easy on a properly chosen diet to far exceed the recommended intake of vitamins. There is no need for nutrients in pill form.

Isn’t it possible to get too much of vitamins or minerals?

> ANSWER: (BN) Not if you take reasonable amounts ... there is no record of any damage

from large amounts of vitamin E. Vitamin C and the B vitamins, being water soluble, are excreted harmlessly if you happen to take more than you need.

MY ANSWER: False again. Although there probably is no direct harm from taking small amounts of vitamins, there is indirect harm. For one, many who take supplements tend to be less cautious with their diet because they feel protected by the pills. This is false security, as there are many substances needed by humans which are not yet in vitamin/mineral tablets. Some substances known at the present time include vanadium, nickel, tin and silicon; also, as any research biochemist will admit, there are probably many vitamin-like substances which will be discovered to be essential as the years go by, and they are not yet in supplements, even the supposedly "natural" supplements from food sources. So the threat of deficiency remains unless care is exercised in choice of foods.

Also, to state that there is no danger from large doses of vitamins E, C and the B complex is to display ignorance of present scientific knowledge. Megadoses of niacin (B3) may damage the liver, raise the blood sugar and uric-acid levels and cause other problems. Megadoses of vitamin C may cause: irritation (leading to diarrhea), kidney stones, problems with mineral metabolism (iron, copper, calcium and phosphorus), and possibly infertility and fetal death. Large doses of vitamin E may elevate the blood fats (high blood fat levels are associated with heart disease), interfere with vitamin A and iron metabolism, interfere with thyroid gland function and cause severe fatigue, perhaps due to muscle damage.

I have heard that some vitamins are incompatible with others and will cancel out their good effects, so they should not be taken together.

ANSWER: (BN) Basically, take your supplements and don't worry about it.

MY ANSWER: When one tries to provide proper nutrition by extracting nutrients from food and taking them in various proportions and quantities, there is indeed a risk of creating imbalances. The best way to supply vitamins to the body is to eat them as nature provided them: in foods.

Should old people and children take vitamins?

ANSWER: (BN) "To produce strong bones, teeth, muscles and perfectly functioning organs," children should take vitamins. "Old age is stress ... so taking supplements is even more important."
MY ANSWER: Both groups definitely need vitamins. But is it too old-fashioned to suggest that they get their vitamins from food at 1/1000 the cost and in a preferable form?

To conclude, then, a proper diet, consisting of mainly raw fruits and vegetables, will supply amounts of vitamins far in excess of the recommended daily allowances. Pollution and stress should be avoided, but their effects are not compensated for by taking supplements. Fruits and vegetables available in the supermarket have enough vitamins to support health in its highest state.

Also, there are many possible sources of harm from megadoses of vitamins, even the water soluble ones such as vitamin C and the B complex. Therefore, avoid these.

Article #6: Antivitamins And Vitamin Antagonists By Marti Fry

Definition

An antivitamin is simply "a substance that makes a vitamin ineffective." A vitamin antagonist is essentially the same thing as an antivitamin. It is a substance that lessens or negates the chemical action of a vitamin in the body.

Following are some examples of antivitamins, or vitamin antagonists.

Some Antagonists of a Few Specific Vitamins

Vitamin A Antagonists

Blood-thinning medications and other drugs, including aspirin, phenobarbitol, arsenicals and dicumarol (a drug used medically to retard bloodclotting), destroy vitamin A in the body.

Vitamin A is also depleted when nitrosamines are formed in the stomach from the union of nitrites with secondary amines and when the mucous membranes of our respiratory passages are exposed to air pollutants (carbon monoxide, ozone, sulphur dioxide, nitrogen dioxide, lead, hydrocarbons, etc.) In addition, mineral oil used as a laxative absorbs vitamin A and carotene (a naturally-occurring substance in foods which is used by the body to make vitamin A), thereby destroying it.

Vitamin K Antagonists

The amount of vitamin K needed by humans is very small, and a deficiency is highly unlikely because this vitamin is in a wide variety of commonly eaten plant foods and is synthesized by bacteria in the intestinal tract. However, antibiotic therapy (the taking of any antibiotics such as penicillin, streptomycin, tetracyclin, Chloromycin, Terramycin, etc.) suppresses bacterial growth and, consequently, the synthesis of vitamin K.

Other vitamin K antagonists include the drugs dicumarol and hydrocoumarol, which are used by medical people to relieve thrombosis (abnormal formation of blood clots in the blood vessels). Because the chemical structure of these antivitamins is similar to that of vitamin K, they act as anticoagulants by interfering with the synthesis of pro-thrombin and the other natural clotting factors.

Vitamin C Antagonists

It is well known that cigarette smokers have lower vitamin C levels than nonsmokers. A Canadian physician, Dr. W. J. McCormick, tested the blood levels of vitamin C in nearly 6,000 smokers. All had below normal readings. the March 9, 1963, issue of *Lancet*, similar findings are revealed by a group of three researchers. Frederick Klenner, M.D., has been quoted for many years as saying that a single cigarette can deplete as much as thirty-five milligrams of vitamin C from the body. (Calcium and phosphorus, both minerals, are also depleted in cigarette smokers.)

Because vitamin C reacts with any alien substance in the bloodstream, all drugs and pollutants can be considered to be vitamin C antagonists. Some of the foremost vitamin C antagonists include ammonium chloride, stribesterol, thiouracil, atropine, barbituates and antihistamines. Alcoholic beverages are also vitamin C antagonists, as are all stresses (surgery, emotional outbursts and upsets, acute pressures, extremes of heat and cold and all drugs).

B Vitamin Antagonists

Cortisone is an antagonist of vitamin B6 (pyridoxine). Since the body needs B vitamins to metabolize sugars, B vitamins are depleted when refined sugar or flour is consumed because refined sugar and flour, are devoid of B vitamins that existed in the beet, cane or grain before refining. Specifically, the body's supply of vitamin Bl, vitamin B2, biotin, choline, niacin and the mineral magnesium are depleted when refined sugar and flour are consumed.

Alcoholic beverages are antagonists of thiamin and the other B-complex vitamins, and coffee is another popular beverage that is a B vitamin antagonist—because it contains caffeine and other noxious substances, one of which is chlorogenic acid. Inositol deficits may occur among coffee drinkers, too, as well as deficits of biotin and thiamin.

Raw fish and raw shellfish, including oysters, are also B-complex antagonists. This is one of many reasons not to eat the Japanese dish, sashime (raw fish) or any other raw seafoods.

Birth control pills are antivitamins, especially of the B vitamins riboflavin, vitamin B6, vitamin B12 and folk acid. Two Indian physicians discovered that women taking oral contraceptives had much lower levels of riboflavin than a control group who used no oral contraceptives. These contraceptives are especially damaging to vitamin B12 and folic acid. (The estrogen in oral contraceptives is also an antagonist of vitamin E.)

The most potent folacin (folic acid) antagonist is aminopterin. This substance has been used in the medical treatment of leukemia, a disease in which there is a marked increase in the production of leucocytes (white blood cells). Though aminopterin has, in some cases, resulted in a temporary relief (remission) of leukemia, it does not "cure" this disease. This is because there are no "cures;" there is only body healing—and antivitamins interfere with body healing but never help it.

A Mineral Antagonist

Most, if not all, vitamin antagonists (all drugs and other stresses) are also mineral antagonists. A specific mineral antagonist is oxalic acid, which is present in too-large amounts in spinach, rhubarb, beets and beet greens, Swiss chard and chocolate. Oxalic acid is a calcium antagonist. Calcium binds the oxalic acid in the body in order to render this toxic acid harmless. In doing so, the calcium is unavailable for its normal uses in the body.

Some Specific Antivitamins

Stresses Are Antivitamins

All kinds of stresses are vitamin antagonists. Drugs are serious stress producers in the body because the body must exercise great effort in expelling them as quickly as possible, lest they damage tissues and cells and interfere too much with normal functioning. In addition, surgery, accidents, overly exhausting work or exercise, exposure to extreme's of heat or cold, and emotions such as fear, hatred, anger, worry and grief all produce great stress on the body. The B vitamins (thiamin, niacin, folic acid, pantothenic acid and vitamin B12) and vitamin C, as well as proteins and minerals, are all depleted and/or unassimilable as a result of stresses on the body. But don't think for a minute that the other vitamins can be properly or fully utilized when the body is under stress—they can't!

Aspirin Is An Antivitamin

Aspirin interferes with digestive processes and can result in stomach bleeding. It interferes with blood-clotting and lessens the ability of cells to absorb glucose for heat and energy. It depletes most, if not all, nutrients and results in especially high losses of vitamin C and the B vitamins plus the minerals calcium

and potassium.

Antibiotics Are Antivitamins

Besides being a vitamin K antagonist, the antibiotic penicillin is also an antivitamin of vitamin B6. The antibiotic streptomycin is a folic acid antagonist and the antibiotic streptomycin inactivates manganese, a mineral which is needed for the functioning of many enzyme systems.

Diuretics Are Antivitamins

Diuretics are drugs prescribed medically to promote weight reduction or to relieve pressure of retained fluids. Even so-called "natural" diuretics, including herbal types, are harmful, for all diuretics result in great losses of B vitamins, vitamin C, other vitamins, and the minerals potassium and magnesium. Diuretics would never be prescribed to anyone on a natural diet containing no rock salt or sea salt, as these salts are poisonous and cause the body to retain fluids to hold the salt in suspension so it doesn't harm cells and tissues.

Laxatives Are Antivitamins

All laxatives, including the herbal types, are vitamin antagonists. Mineral oil is perhaps the most devastating laxative. It absorbs vitamin A and carotene, as well as the other fat-soluble vitamins (vitamin D, vitamin E and vitamin K). It also absorbs calcium and phosphorus, carrying them out of the body. (Hospitals today still use mineral oil as a laxative for their patients, one of thousands of reasons why hospitals are antivital places.) Laxatives will never be used by people on a natural all-raw diet of fruits, vegetables, sprouts, nuts and seeds.

Soil, Air and Water Pollutants Are Antivitamins

Most people regard soil, air and water pollutants as "unavoidable" antivitamins that necessitate the use of vitamin supplementation. However, not only are the vitamins from fresh whole foods more than adequate to meet our needs when our diet is all or mainly raw foods of our biological adaptation (as described in the Life Science health system), but they will also meet our needs adequately despite our polluted air and water.

Besides this argument against food supplementation, we can control completely the water we drink by drinking only pure distilled water. To some extent we can also control the quality of the air we breathe by keeping the pollutants out of our homes and/or by locating away from the pollution of cities and other highly-populated or polluted centers. Foods not grown organically are "fed" (via their soil) synthetic chemical fertilizers which contain excessive nitrogen. This excessive nitrogen increases the crop yield, but the ultimate health costs are high—too high. Nitrates and nitrites are formed, and these pollutants are potent antivitamins.

Dr. E. E. Hatfield revealed, from his results in an animal research project, that nitrates and nitrites systematically and subtly reduce the vitamin A stored in the liver. They also prevent formation of this vitamin in our body from its precursor, carotene, which is present in much produce. Also, according to Dr. W. M. Beeson of Purdue University's Department of Animal Sciences, fruits picked green contain far higher amounts of nitrates and far less carotene than tree and vine-ripened fruits.

Nitrites join with amines in the stomach, forming nitrosamines. Nitrosamines are highly carcinogenic, though not necessarily moreso than other pollutants and drugs. As often and as much as possible, purchase organically-grown produce and/or produce that has been fully ripened on the tree or vine.

Keep in mind, too, that buying organically-grown foods and then cooking them, seasoning them, or taking any kind of drugs or medications whatsoever makes little sense. You are far better off not to

concern yourself with whether or not your food is or isn't organically grown and just discontinue use of any and all drugs and medications. The ideal, however, is to both discontinue drugs and to purchase organically-grown foods when possible.

Nitrites, chlorine, flourides, inorganic minerals and many other harmful substances found in city, spring, well and other nondistilled waters are all antivitamins. Therefore, only distilled water should be drunk.

Antivitamins found in polluted air, especially city air, are carbon monoxide, hydrocarbons, lead, ozone, sulphur dioxide and nitrogen dioxide. Vitamin A and vitamin C are both depleted when the body is exposed to air containing these pollutants, as is vitamin E. Arsenic dust, found on commercially-grown produce, is an antagonist of the B vitamin PABA (para-aminobenzoic acid). This vitamin is important for the growth of valuable bacteria in the intestines, for the metabolism of proteins, for manufacture of red blood cells and for healthy skin and hair.

Conclusion

This has been only a partial listing of a few specific vitamin antagonists or antivitamins. In reality, any substance that is not food of our biological adaptation and any living practice that is not in accord with our physiological needs is a vitamin antagonist—in fact, a nutrient antagonist. All substances and practices not normal (physiologically, not in the commonly-used meaning of what is widely practiced) to humans interferes with normal functioning, including the normal use of vitamins in the body.

Article #7: What To Do About Vitamin Antagonists By Marti Fry

If you've read any popular health books or magazines, you've no doubt heard about vitamin antagonists, or anti-vitamins. They are portrayed as "thieves out for the highest stakes: your health and well-being." They are described as criminals. However, while these descriptions may make for colorful writing, they do not point to the real culprits. Even worse, they point their readers to harmful and ineffective solutions to the problem.

Drugs, medicines, pollutants, stresses, refined sugar and flour, coffee, alcohol, the Pill, etc. are inert, lifeless substances, and they are not anxiously waiting to get into human bodies where they can ravage and plunder and make off with booty. People are the real culprits, the thieves. From the consumer or user to the manufacturer, inventor and promoter, people are the living beings who are responsible for depleting their own vitamin supplies and rendering vitamins consumed nonusable. Humans are responsible for the living practices that so enervate their bodies that assimilation of nutrients is impaired. We are responsible for informing ourselves (and others) of a healthful lifestyle.

Popular health magazines make statements such as the following from *Bestways* (September 1981): "Drugs are antagonists in many ways. They destroy nutrients, cause them to be used up quickly, keep them from being absorbed, rush them through the system before they can do the most good, and sometimes replace them chemically."

What they're saying is that drugs interfere with normal body functioning. Drugs are vitamin antagonists, however, only if humans consume them. We humans do not have to consume any drugs. Therefore, we need not deplete our vitamin stores, etc. We need only avoid drugs and eat wholesome foods in appropriate amounts. Pollutants that are unavoidable (such as soil and air pollutants) cannot deplete our vitamin stores and intake to the extent that we need concern ourselves about deficiencies or consider

using vitamin supplements.

The best way (and the only healthy way) to deal with the problem of vitamin antagonists is to stay away from the physicians, hospitals, pharmacies, etc. that prescribe and sell drugs and medications. We should also do the best we can to live in a healthful environment and lead a stress-free lifestyle. The idea that we can counteract the harmful effects of drugs and other stresses with the use of vitamin and/or mineral supplements is entirely erroneous. A proper diet and lifestyle will simultaneously supply the nutrients we need and include no vitamin antagonists or anti-vitamins. Health results from healthful living—that's a fact to keep in mind at all times!

Article #8: Factors That Lower Vitamin Needs By T. C. Fry

Healthy people require less of all nutrients because their bodies make more efficient use of them. Not only that, but healthy people eat wholesome foods that furnish more nutrients. Thus, their needs are lower and their supplies are simultaneously higher than that of unhealthy people.

Certain societies of the world, notably some West Indian and Carib tribes of the world, have been thriving on 15 to 20 grams of daily protein intake, far less than is considered necessary. These people live on foods such as cassava, manioc and other starchy roots that contain only .2 to .3 percent protein. Just as they thrive on an "abnormally" low protein intake, they also thrive on a vitamin intake that would quickly result in deficiencies in our stressful and self-poisoned people.

For the reasons that other societies can thrive on diets that would make ours deficient, there are those within our society who so live as to parallel the healthful groups in other lands. Thus, a raw food fruitarian within our society that has a highly efficient body requires but a fraction of the vitamins as his counterpart who eats meats; dairy and poultry products; cooked foods; condiments and seasonings; refined, processed and preserved foods, and who may have one or several drug habits such as tobacco, alcohol, coffee, medications, etc.

The seeming unfairness of this situation is that, though raw food fruitarians eat less than half as much as their perverted cousins, their intake of usable vitamins, minerals and other nutrients are usually much greater though their needs are much lower.

The healthier our lifestyles, the less vitamins we need in the face of greater supply, whereas the less wholesome our lifestyles, the greater our needs in the face of lowered supply and lowered ability to utilize.

Exercise and Vitamin Utilization

Vigorous exercise activity on a regular basis slightly increases our need for vitamins on the one hand but, on the other, so fine-tunes our system that they vastly increase their efficiency in uptake, assimilation and usage. With all other life factors properly observed, including a proper diet of mostly fruits with some vegetables, nuts and seeds, body toxicity is very low. All other needs are correspondingly lower due to the higher efficiency of the organism.

Emotional Poise Necessary to Optimum Vitamin Usage

Being emotionally balanced is normal. Abnormal emotional conditions vitiate and drain our resources

and heighten our need for vitamins while at the same time impairing our ability to utilize them. Thus can be seen the enormous benefit of establishing self-mastery and a becalming philosophical outlook.

Raw Foods and Vitamin Usage

A proper diet of mostly ripe raw fruits and some raw vegetables with raw nuts and seeds not only furnishes us with problem-free eating, but it also heightens body efficiency, thus lowering need. On the other hand, the nutrient values obtained from this proper diet are greater by far than conventional diets, even in the face of intake amounting to less than half that of conventional feeders.

Correct Foods and Feeding Practices

Vitamin utilization is more efficient if intake is of those foods to which we are biologically adapted. Our digestive expenditures are lowered and body energy needs are likewise lowered. More nerve and chemical energy are available for the regular pursuits of life. Less sleep is required to restore "our fund of nerve energy in view of decreased need and increased efficiency of generation when faculties are operating better.

Vitamin intake is greater on a proper diet, while vitamin need decreases on several accounts. The big bonus is increased body efficiency that makes better use of nutrients.

Article #9: Factors That Interfere With Vitamin Utilization And The Applicable Principles By T.C. Fry

You can read much in conventional health magazines about smokers requiring more vitamin C, about alcoholics requiring more B-Complex vitamins and so on. Peddlers of vitamins highlight greater need for vitamins by those on drugs, both habitual and medical, in order to induce drug users to purchase vitamin supplements. However, vitamin utilization is the least of the ill effects of drug habits, whether they be alcohol, tobacco, coffee, condiments and seasonings, medicinal, recreational or internally created drugs from the toxicity of retained metabolic wastes.

Factors That Interfere With Usage Also Destroy Health

There would be no argument against drugs if the destruction of vitamins within the body were their only evil because our natural foods would more than compensate for the loss. But vitamin depletion is only one of the minor effects of drugs. They are far more destructive to the organism itself!

Drugs are a three-edged sword! For practical purposes we must classify sugar, white flour, processed and refined foods, cooked foods, meats and animal products, coffee, condiments and seasonings, tobacco, alcohol, marijuana, herbs, inorganic minerals, prescribed and over-the-counter drugs, synthetic foods and supplements, etc. as drugs.

The first bad effect of so-called "foods" that have drug effects is less vitamin intake, even if they are "enriched." The second effect is that the body requires extra vitamins in order to deal with the toxicity. Thirdly, and even worse, these substances impair our ability to utilize vitamins.

Some by-products of drug use are loss of sex potency; interference with vitamin utilization; loss of vital

senses such as taste, smell, eyesight, hearing and touch; increasing ugliness of both appearance and disposition; and loss of mental faculties.

Stress and Vitamin Depletion

Stress might be likened, in its effects upon the body and its fund of nerve energy, as crossing the wires to a battery. The battery shorts out and is quickly drained. Stress thusly requires more body resources on one hand, while impairing body functions on the other hand. When the body is bereft of a normal fund of nerve energy and other faculties, there is a great increase in uneliminated body wastes. Toxemia arises and problems proliferate.

Emotional upsets are perhaps the most stressful experiences of all. Cultivating self-mastery and a philosophical attitude lowers our liability in the face of stress.

Toxemia and Decreased Vitamin Usage

Toxins within the body have drug effects. They interfere with vitamin uptake and usage while simultaneously increasing need for vitamins in order to cope. Further, they impair the faculties involved with vitamin assimilation and usage.

Principles That Apply

A theme that runs through the observations of vitamin antagonists can be expressed as principles that are highly instructive:

1. The less wholesome our food and practices, the fewer usable vitamins we will get.
2. The less wholesome our food and practices, the more vitamins we'll require.
3. The less wholesome our food and practices, the less able we are to make use of vitamins.

Thus, again, we can see demonstrated that bad practices proliferate bad results.